CLAIMS

1. A folder for a printing press, the folder operable to cut a web into individual printed products, the folder comprising:

at least one infeed roller;

a first motor operable to drive the at least one infeed rollers at a first speed;

a pair of cutting cylinders positioned downstream of the infeed rollers;

a second motor operable to drive the cutting cylinders at a second speed that is independently variable from the first speed;

a diverter mechanism positioned downstream of the cutting cylinders; and,

a third motor operable to drive the diverter mechanism at a third speed that is independently variable from the first and second speeds.

2. The folder of claim 1, further comprising:

first and second collator belts supported by the frame and circulating in endless loops, the collator belts lying in substantially face to face relation between the cutting cylinders and the diverter mechanism.

3. The folder of claim 2, further comprising:

a fourth motor operable to drive the first collator belt at a fourth speed that is independently variable from the first, second, and third, speeds; and

a fifth motor operable to drive the second collator belt at a fifth speed that is independently variable from the first, second, third, and fourth speeds;

wherein the fourth and fifth speeds are substantially equal and are variable with respect to the first, second, and third speeds to change a gap between cut printed products carried between the first and second collator belts.

4. The folder of claim 3, further comprising third and fourth collator belts circulating in endless loops, the third collator belt lying in substantially face to face relation with the first collator belt to define a first collation path extending away from a first side of the diverter mechanism, and the third collator belt lying in substantially face to face relation with the second collator belt to define a second collation path extending away from a second side of the diverter mechanism, wherein the third collator belt is driven by the fourth motor and the fourth collator belt is driven by the fifth motor.

5. The folder of claim 4, wherein the third speed is adjustable to zero to thereby divert signatures toward only one of the first and second collation paths.

6. The folder of claim 4, further comprising a first slow-down mechanism positioned along the first collation path and independently driven by a sixth motor, and a second slow-down mechanism positioned along the second collation path and independently driven by a seventh motor.

7. The folder of claim 6, further comprising a first delivery bucket positioned downstream of the first slow-down mechanism and independently driven by an eighth motor, and a second delivery bucket positioned downstream of the second slow-down mechanism and independently driven by a ninth motor.

8. The folder of claim 1, wherein the second speed is variable with respect to the first speed to adjust a cut length of each printed product.

9. The folder of claim 1, wherein a first distance between the infeed rollers and the cutting cylinders, and a second distance between the cutting cylinders and the diverter mechanism are substantially fixed, regardless of the motor speeds.

10. The folder of claim 1, further comprising a control system communicating with each motor and operable to vary each speed.

11. The folder of claim 1, further comprising a printed product sensor positioned between the cutting cylinders and the diverter mechanism and operable to sense the relative position of sequential printed products travelling through the folder, and wherein the third speed is changed in response to the relative position of sequential printed products sensed by the sensor.

12. A folder for a printing press, the folder operable to cut a web of product into individual printed products, the folder comprising:

a cutting section including cutting cylinders that cut the web into individual printed products;

a cutting motor operable to drive the cutting cylinders;

a delivery assembly including delivery belts operable to guide the individual printed products through the folder;

at least one delivery motor operable to drive the delivery belts;

a diverting assembly for diverting individual printed products to one of a plurality of collation paths; and,

a diverting motor operable to drive the diverting assembly.

13. The folder of claim 12, wherein the diverting assembly includes a diverter wedge.

14. The folder of claim 13, wherein the diverting assembly includes a diverter nip, and wherein the diverter nip moves with respect to the diverter wedge to guide printed products toward opposite sides of the diverter wedge.

15. The folder of claim 12, further comprising an infeed section including guide rollers that guide the web toward the cutting section.

16. The folder of claim 15, further comprising an infeed motor operable to drive the guide rollers.

17. The folder of claim 12, wherein the delivery belts include a first delivery belt and a second delivery belt lying in face to face relation between the cutting section and the diverting section, the folder further comprising a first collator belt lying in face to face relation with the first delivery belt downstream of the diverting section, and a second collator belt lying in face to face relation with the second delivery belt downstream of the diverting section, and wherein the at least one delivery motor includes a first delivery motor operable to drive the first delivery belt and the first collator belt, and a second delivery motor operable to drive the second delivery belt and the second collator belt.

18. The folder of claim 12, further comprising a control system communicating with each motor and operable to independently control an operating speed of each motor.

19. The folder of claim 12, further comprising a printed product sensor positioned between the cutting section and the diverting assembly and operable to sense the relative position of sequential printed products travelling through the folder, and wherein the diverting motor operates in response to the relative position of sequential printed products sensed by the sensor.

20. A method for changing a cutting length of a folder of a printing press, the method comprising:

operating a delivery motor to drive a pair of delivery belts at a first belt speed;

operating a cutting motor to drive a cutting cylinder at a first cutting speed and to cut a web into individual printed products having a first length; and,

changing the operation of the cutting motor to drive the cutting cylinder at a second cutting speed and to cut the web into individual printed products having a second length.

21. The method of claim 20, wherein the second cutting speed is faster than the first cutting speed, and the second length is shorter than the first length.

22. The method of claim 20, further comprising maintaining the first belt speed as the operation of the cutting motor is changed.

23. The method of claim 20, further comprising changing the operation of a diverter motor as the operation of the cutting motor is changed.

24. A folder for a printing press, the folder operable to cut a web into individual printed products, the folder comprising:

at least one infeed roller;

a first motor operable to drive the at least one infeed rollers at a first speed;

a pair of cutting cylinders positioned downstream of the infeed rollers;

a second motor operable to drive the cutting cylinders at a second speed that is independently variable from the first speed;

a diverter mechanism positioned downstream of the cutting cylinders;

a third motor operable to drive the diverter mechanism at a third speed that is independently variable from the first and second speeds;

first and second collator belts supported by the frame and circulating in endless loops, the collator belts lying in substantially face to face relation between the cutting cylinders and the diverter mechanism;

a fourth motor operable to drive the first collator belt at a fourth speed that is independently variable from the first, second, and third, speeds;

a fifth motor operable to drive the second collator belt at a fifth speed that is independently variable from the first, second, third, and fourth speeds;

a first slow-down mechanism positioned along a first collation path and independently driven by a sixth motor;

a second slow-down mechanism positioned along a second collation path and independently driven by a seventh motor;

a first delivery bucket positioned downstream of the first slow-down mechanism and independently driven by an eighth motor; and,

a second delivery bucket positioned downstream of the second slow-down mechanism and independently driven by a ninth motor.

25. The folder of claim 24, wherein the fourth and fifth speeds are substantially equal and are variable with respect to the first, second, and third speeds to change a gap between cut printed products carried between the first and second collator belts.

26. The folder of claim 24, further comprising third and fourth collator belts circulating in endless loops, the third collator belt lying in substantially face to face relation with the first collator belt to define the first collation path, and the third collator belt lying in substantially face to face relation with the second collator belt to define the second collation path, wherein the third collator belt is driven by the fourth motor and the fourth collator belt is driven by the fifth motor.

27. The folder of claim 26, wherein the third speed is adjustable to zero to thereby divert signatures toward only one of the first and second collation paths.

28. The folder of claim 24, wherein the second speed is variable with respect to the first speed to adjust a cut length of each printed product.

29. The folder of claim 24, further comprising a control system communicating with each motor and operable to vary each speed.

30. The folder of claim 24, further comprising a first printed product sensor positioned between the cutting cylinders and the diverter mechanism and operable to sense a relative position of sequential printed products travelling through the folder, and wherein the third speed is changed in response to the relative position of sequential printed products sensed by the first sensor.

31. The folder of claim 30, further comprising a second printed product sensor positioned between the diverter mechanism and the first slow-down mechanism and operable to sense a relative position of sequential printed products travelling along the first collation path, and a third printed product sensor positioned between the diverter mechanism and the second slow-down mechanism and operable to sense a relative position of sequential printed products travelling along the second collation path, and wherein the sixth and seventh motors operate in response to the relative positions of sequential printed products sensed by the second and third sensors respectively.

32. A folder for a printing press, the folder operable to cut a web of product into individual printed products, the folder comprising:

a delivery assembly including delivery belts operable to guide the individual printed products through the folder;

at least one delivery motor operable to drive the delivery belts;

a diverting assembly for diverting individual printed products to one of a plurality of collation paths;

a diverting motor operable to drive the diverting assembly independently of the delivery motor; and

a first printed product sensor positioned upstream of the diverting assembly and operable to sense a relative position of sequential printed products travelling through the folder, wherein the diverting motor operates in response to the relative position of sequential printed products sensed by the first sensor to drive the diverting assembly at varying speeds.

33. The folder of claim 32, further comprising a cutting section upstream of the first sensor and including cutting cylinders that cut the web into the individual printed products, and a cutting motor operable to drive the cutting cylinders independently of the delivery motor and the diverting motor.

34. The folder of claim 32, further comprising a first slow-down mechanism positioned along a first collation path downstream of the diverting assembly and independently driven by a first slow-down motor, and a second slow-down mechanism positioned along a second collation path downstream of the diverting assembly and independently driven by a second slow-down motor.

35. The folder of claim 34, further comprising a second printed product sensor positioned between the diverting assembly and the first slow-down mechanism and operable to sense a relative position of sequential printed products travelling along the first collation path, and a third printed product sensor positioned between the diverting assembly and the second slow-down mechanism and operable to sense a relative position of sequential printed products travelling along the second collation path, and wherein the first and second slow-down motors operate in response to the relative positions of sequential printed products sensed by the second and third sensors respectively.

36. The folder of claim 32, wherein the diverting assembly includes a diverting wedge, and wherein sequential printed products are alternatingly diverted to opposite sides of the diverting wedge.